

is the average received power for the symbol or a subset of symbols in interval $I_i^{(n)}$, $N^{(n)}$ is the estimated interference at time n , Δ_{TPC} is a change of power in dB, resulting from a prior TPC command, and Δ_{rel} is a relative power discrepancy between pilot and data symbols in dB.

REMARKS/ARGUMENTS

1. Claim Amendments

The Applicant has amended claim 1, 5, 8 and 16 and canceled claims 2 and 9. Applicant respectfully submits no new matter has been added. Accordingly, claims 1, 3-8 and 10-16 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

2. Claim Objections

Claims 1-16 was objected to because of the following informalities: Regarding claims 1, 8, and 16, the recitation in the claims "if" seems to be improper because the use of the word "if" renders the claims indefinite (see 35 USC 112 2nd paragraph indefinite). Applicant has corrected claims 1, 8 and 16.

Regarding claim 5, the recitation in lines 1-2 of claim 5 "The method according to claim 4, that the estimated interference is filtered" was deemed improper. Applicant has corrected claim 5. Claims 2-7, and 9-16 were objected to because they depend directly or indirectly from the claims objected to above. Claims 2 and 9 have been canceled. The independent claims from which these depend have been corrected.

3. Claim Rejections – 35 U.S.C. § 101

Claims 1-7 and 15-16 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claim 2 has been canceled. Claim

1, from which the remaining claims depend, has been amended to overcome the Section 101 rejection.

4. Claim Rejections – 35 U.S.C. § 103 (a)

Claims 1, 4-8 and 11-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh (US 20030100267 A1) in view of Mochizuki (US 20020082038 A1). Claims 2-3 and 9-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh and Mochizuki as applied to claims 1 and 8, and further in view of Dabak (US 6804311 81). Claim 2 has been incorporated into Claim 1 and claim 9 has been incorporated into claim 8 to better define the intended scope of the claimed invention. The combination of Itoh, Mochizuki and Dabak do not disclose nor suggest the present invention as now claimed.

The key to the present invention is that the checking of the transmit power control (TPC) includes the estimation of the previous and the present power using a weighted contribution of the pilot signals and the data. The present invention provides a robust and precise SIR estimate under conditions with noise disturbed transmission channels and unknown contents of the transmitted data.

The plain meaning of former claim 2, now incorporated into claim 1 (and similarly for claims 8/9) is that if the power step/TPC command is verified, then data symbols prior to the pilot slot could also be used for SIR estimation. In contrast, Dabak is directed to detecting transmit diversity and is not directed to power control. The "weighting coefficients" disclosed by Dabak are irrelevant to the objectives and features of the present invention. Note that Dabak, par. 3, lines 47-58, refers to Rayleigh fading parameters corresponding to a first antenna lead. Hence, Dabak appears directed to weighting the difference in fading due to different antennas (transmit diversity). Hence, it is not applicable to the transmit power control objectives of the present invention.

Regarding the combination of these references, the Examiner states that Itoh and Dabak are analogous art because they are from the same field of endeavor of TPC in CDMA. At the time of the invention, according to the Examiner, it would have been

obvious to a person of ordinary skill in the art to incorporate in the system disclosed by Itoh the determination and weighting disclosed by Mochizuki. The suggestion/motivation for doing so would have been to improve the performance.

As an initial matter, the Examiner's motivation for combining is just the conclusory statement: "...to improve the performance". Such a broad generality is not sufficient under KSR International Co. v. Teleflex Inc. (KSR).

KSR requires that an Examiner provide "some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness." (KSR Opinion at p. 14). An Examiner must "identify a reason (not a conclusion) that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does," (KSR Opinion at p. 15). And, the Examiner must make "explicit" this rationale of "the apparent reason to combine the known elements in the fashion claimed," including a detailed explanation of "the effects of demands known to the design community or present in the marketplace" and "the background knowledge possessed by a person having ordinary skill in the art." (KSR Opinion at p. 14). Anything less than such an explicit analysis is not be sufficient to support a prima facie case of obviousness.

Based upon KSR, the Examiner has failed to show any sufficient reason for combining the references, and therefore the claims are not obvious in view of any combination of the cited references."

Further, the IEEE article cited by the Examiner fails to disclose the element of determining if the TPC command has been received correctly and weighting the pilot and data symbols. It is directed to a soft symbol reliability estimation for closed loop power control.

Regarding Mochizuki, it discloses:

During soft handover, base station selector 22 selects the base station that is transmitting the downlink signal with the best downlink reception quality, and notifies the base stations of the ID of this base station, so as to cause only the selected base station to transmit user data. Downlink signal weight decision circuit 23 estimates base stations

that have a likelihood of transmitting user data. Downlink TPC command decision circuit 25 uses the downlink signal from the base stations that have a likelihood of transmitting user data, to decide whether the transmission power of the base stations is excessive or insufficient, and to instruct the base stations to increase or decrease their transmission power. Data demodulator 27 uses the downlink signals from base stations that have a likelihood of transmitting user data to demodulate the user data.

Further, Mochizuki paragraphs [0150] and [0179] disclose:

[0150] If reception quality for the uplink channel is ideal, the base stations increase or decrease their transmission power as instructed by the TPC command. However, the poorer the reception quality for the uplink channel is, the more the increase or decrease in transmission power diverges from that instructed by the TPC command. Consequently, the correlations indicated by signals S8, S9 and S10 indicate which of the base stations have correctly received the TPC command. In other words, these correlations show the estimated value of reception quality for the uplink channel (hereinafter called the estimated uplink reception quality).

[0179] According to this embodiment, because downlink transmission power is controlled by means of the signal obtained by weighting and combining the downlink signals from base stations that have been estimated to have a likelihood of transmitting via the DPDCH, the transmission power of the DPDCH from each base station can be more adequately controlled and interference with the downlink signal to other mobile terminals can be decreased.

Mochizuki fails to disclose the element of determining if the TPC command has been received correctly and weighting the pilot and data symbols. The weighting in Mochizuki is looking at giving different weights *dependent on the likelihood of each of the base stations sending user data or not*. (See claims 19-23, paragraph 171, in addition to paragraphs 179 and 186 as referenced by the Examiner). Mochizuki is communicating with several base stations in a soft handover set up, where the UE has contact with more than one base station at a cell border, before doing the actual handover to the new base station in the new cell.

In contrast, in the present invention, the UE is only weighting the data and pilot symbols from one base station. Further, in the present invention data symbols and/or the pilot symbols are given weights in proportion to the power each of these contributes.

More specifically, Mochizuki, paragraph [0179] is directed to controlling the transmit power of the downlink DPDCH, which is not the operation of the present invention. The present invention is operable to reduce the noise of the DPCH SIR estimate. Mochizuki, paragraph [0150], appears to attempt to ascertain the quality of the uplink channel, which is not a concern of, nor is such performed by, the present invention. Mochizuki is adapted to control which base-station should be used in the transmission of data.

The Examiner's consideration of the amended claims is respectfully requested.

6. Prior Art Not Relied Upon

In the conclusion paragraph on page 7 of the Office Action, the Examiner stated that the prior art made of record and not relied upon is considered pertinent to the Applicant's disclosure. None of the cited references, alone or in combination, disclose or suggest the novel and non-obvious aspects of the present application as claimed.

CONCLUSION

In view of the foregoing remarks, the Applicant believes all of the claims currently pending in the Application to be in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw all rejections and issue a Notice of Allowance for all pending claims.

The Applicant requests a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,



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